



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-185



### **AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)**

As of FY 2017 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

**Program Name**

AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM)

**DoD Component**

Air Force

**Joint Participants**

Navy

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## References

**SAR Baseline (Production Estimate)**

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 17, 1992

**Approved APB**

Component Acquisition Executive (CAE) Approved Acquisition Program Baseline (APB) dated October 28, 2015

## Mission and Description

The Advanced Medium Range Air-to-Air Missile (AMRAAM) AIM-120 program provides for the acquisition and upgrade of the most advanced all-weather, all-environment medium range air-to-air missile system in response to United States Air Force, United States Navy, North Atlantic Treaty Organization, and other Allied operational requirements through 2024. Designed to replace the AIM-7 Sparrow, the system is an active radar guided intercept missile with inherent Electronic Protection capabilities for air-to-air applications against massed penetration aircraft. The AIM-120D, currently in production, provides improved accuracy via Global Positioning System aided navigation, improved network compatibility, and enhanced aircrew survivability via a two-way datalink capability. The AIM-120D reached IOC for the United States Air Force and Navy in 2015.

## Executive Summary

**AIM-120D IOC:** AIM-120D reached IOC for the US Navy on January 5, 2015 and the US Air Force on July 9, 2015.

**AIM-120 Basic Electronic Protection Improvement Program (EPIP):** Basic EPIP is a missile software upgrade to provide AIM-120C3/4/5/6 and C7 missiles with improved capability against electronic attack (EA). The EPIP program has separate software configurations for both the AIM-120C7 and AIM-120C-3/4/5/6 missiles. The US Air Force approved fielding for the AIM-120C7 in February 2015 and the US Navy approved fielding in April 2015. The AIM-120C3/4/5/6 dedicated Operational Test (OT) program is completed, and fielding authorization is anticipated in 2nd Quarter FY 2016.

**AIM-120C7 Advanced Electronic Protection Improvement Program (AEPIP):** AEPIP is structured to deliver combat capability for the AIM-120C7 via two incremental and complimentary software tapes, Tape 1 and Tape 2. Tape 1 provides enhanced capability to fielded systems. Tape 2 builds on the capabilities of Tape 1 and expands the system's envelope. Tape 1 and 2 development is on track, and performance Probability of weapons effectiveness (Pwe) meets or exceeds requirements. Tape 1 completed two of three Integrated Test (IT) live fires in November 2015, with the third shot projected for 3rd Quarter FY 2016. Tape 2 Developmental Testing (DT) completed three of seven captive carry missions and Critical Design Review (CDR) in 2015. The planned fielding dates for Tape 1 and Tape 2 are 4th Quarter FY 2017 and 4th Quarter FY 2018 respectively.

**AIM-120D System Improvement Program (SIP):** SIP is a software upgrade program structured to deliver increased combat capability and counter advanced threats and EA techniques on planned intervals to the AIM-120D. Three efforts are now in development, SIP 1, SIP 2, and SIP 3. SIP 1 successfully passed the Operational Test Readiness Review on September 11, 2015. The Air Force Operational Test and Evaluation Center conducted two live OT shots on February 4 and 9, 2016. SIP 2 kicked off Engineering & Manufacturing Development with an Integrated Baseline Review (IBR) in September 2015. The next milestone, CDR, is planned for 4th Quarter FY 2016. The SIP 3 effort began with Technology Maturation and Risk Reduction (TMRR) kick off in November 2015 followed by an IBR conducted in January 2016. SIP 1 fielding is projected for 4th Quarter FY 2016 followed by SIP 2 fielding in 1st Quarter FY 2019 and SIP 3 fielding in 1st Quarter FY 2021.

**Processor Replacement Program (PRP):** PRP is a Diminishing Manufacturing Sources and Material Shortages (DMSMS) project to provide a form-fit-function replacement for the obsolete Data Processor and Input / Output cards onto a single Circuit Card Assembly. Delivery of the final AIM-120D PRP software was completed in January 2015. In May 2015, PRP successfully completed qualification and the final Engineering Change Proposal (ECP) was approved to support missile deliveries to the warfighter. PRP missiles are now in production.

**VCAS (Value Control Actuation System):** VCAS is a DMSMS replacement for the Shortened Control Actuation System in PRP configured AIM-120D and AIM-120C7 tactical missiles. VCAS production cut in was planned to begin with Lot 27 deliveries in July 2015, however, tactical missile deliveries were delayed due to VCAS qualification issues. Raytheon released the VCAS qualification report on December 18, 2015 and successfully passed the Functional Configuration Audit on January 15, 2016, enabling the completion of safe separation flight testing targeted for 3rd Quarter FY 2016. ECP approval, planned for 4th Quarter FY 2016, is the final step for deliveries of Lot 27 units.

**Safe and Arming Fuze (SAF) for F-35 / AMRAAM Flight Test:** The SAF is a component used for both the warhead in AMRAAM tactical missiles and the Flight Termination System (FTS) in instrumented flight test missiles. The SAF FTS allows range safety the ability to terminate the flight of a test missile. In August 2015, Range Safety and the Program Office determined that production SAFs for flight test missiles have not been lot acceptance tested (LAT) to required specification levels. LAT has been conducted at the tactical level instead of the harsher FTS level for all SAFs. Range Safety has provided a variance for use of SAFs for legacy fighter testing due to the exceptional SAFs safety record in past testing. However, due to the more rigorous F-35 test environment, Range Safety clears the SAFs for F-35 testing on a case by case basis. The Program Office has worked closely with Range Safety and the F-35 Program Office to develop and execute a short and long term plan for AIM-120 testing.

**Form, Fit, Function Refresh (F3R):** F3R is a comprehensive AMRAAM DMSMS project to mitigate obsolescence issues in the AMRAAM guidance section and enable missile production beyond Lot 31. Currently in Phase 3 for Detailed Design, Raytheon has experienced technical difficulties with the Application Specific Integrated Circuit design, hardware integration, and guidance section performance demonstration in preparation for CDR. CDR is delayed from November 2015 to April 2016 to ensure technical maturity and completion of design verification prior to proceeding to the next phase. F3R production is planned to cut in the latter part of Lot 31 in FY 2019.

**AIM-120 Lot 28-30 Production Contract:** The Lot 28 contract, with priced options for Lots 29 and 30, was awarded on December 22, 2014 for \$492M. Lot 29 contract option was awarded on March 24, 2015 for \$529M. Lot 30 contract option award is planned for 2nd Quarter FY 2016.

**AIM-120 Program Support and Annual Sustainment (PSAS) 2015 Contract:** PSAS is an Indefinite-Delivery-Indefinite-Quantity (IDIQ) contract for program support, contractor logistics support (CLS), the Service Life Prediction Program (SLPP), and non-warranty depot repair. The basic PSAS 2015 contract was awarded on September 21, 2015 with a ceiling price of \$180M. The first task order for program support, CLS, and SLPP was awarded on September 21, 2015, for \$18M.

**AIM-120D Production:** As of December 31, 2015, Raytheon has delivered 1,498 of 2,074 AIM-120D missiles on contract and has delivered 1,548 of 2,400 AIM-120C7 FMS missiles on contract (through Lot 29).

**AIM-120 Sustainment:** Joint missile availability as of December 31, 2015 is 91.6% against an APB threshold of 82%.

There are no significant software-related issues with this program at this time.

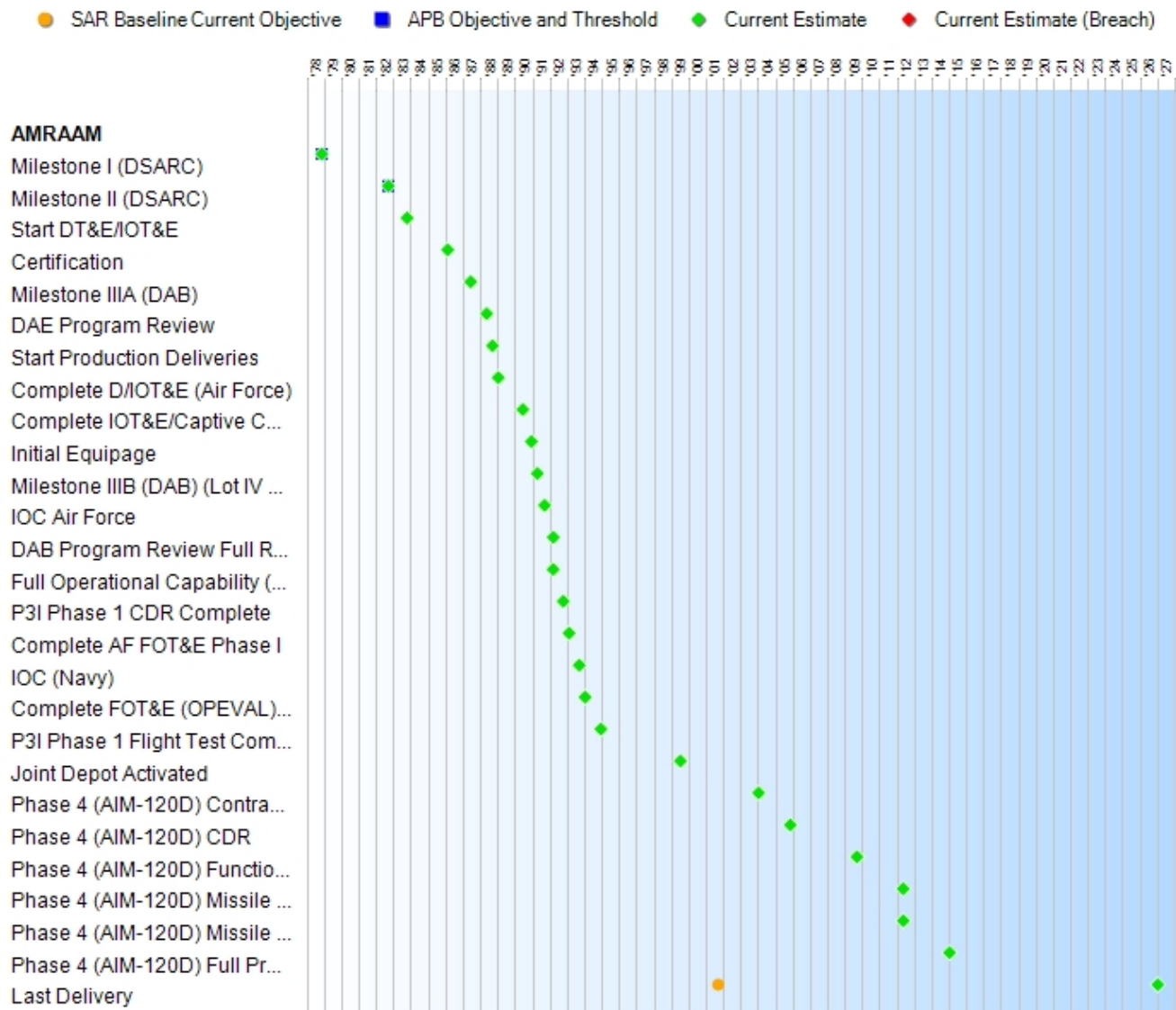


Threshold Breaches

APB Breaches		
Schedule		<input type="checkbox"/>
Performance		<input type="checkbox"/>
Cost	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
O&S Cost		<input type="checkbox"/>
Unit Cost	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

## Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone I (DSARC)	Nov 1978	Nov 1978	Nov 1978	Nov 1978
Milestone II (DSARC)	Sep 1982	Sep 1982	Sep 1982	Sep 1982
Start DT&E/IOT&E	Oct 1983	N/A	N/A	Oct 1983
Certification	Feb 1986	Feb 1986	Feb 1986	Feb 1986
Milestone IIIA (DAB)	Jun 1987	Jun 1987	Jun 1987	Jun 1987
DAE Program Review	May 1988	May 1988	May 1988	May 1988
Start Production Deliveries	Sep 1988	Sep 1988	Sep 1988	Sep 1988
Complete D/IOT&E (Air Force)	Jan 1989	Jan 1989	Jan 1989	Jan 1989
Complete IOT&E/Captive Carry Reliability Program w/Lot 1 Assets (Air Force)	Jun 1990	Jun 1990	Jun 1990	Jun 1990
Initial Equipage	Dec 1990	Dec 1990	Dec 1990	Dec 1990
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	Apr 1991	Apr 1991	Apr 1991	Apr 1991
IOC Air Force	Mar 1991	Sep 1991	Sep 1991	Sep 1991
DAB Program Review Full Rate Production Approval	Mar 1992	Mar 1992	Mar 1992	Mar 1992
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	Mar 1992	Mar 1992	Mar 1992	Mar 1992
P3I Phase 1 CDR Complete	Oct 1992	Oct 1992	Oct 1992	Oct 1992
Complete AF FOT&E Phase I	Mar 1992	Feb 1993	Feb 1993	Feb 1993
IOC (Navy)	Sep 1992	Sep 1993	Sep 1993	Sep 1993
Complete FOT&E (OPEVAL) (Navy)	Mar 1992	Jan 1994	Jan 1994	Jan 1994
P3I Phase 1 Flight Test Completed	Dec 1994	Dec 1994	Dec 1994	Dec 1994
Joint Depot Activated	Sep 1994	Jul 1999	Jul 1999	Jul 1999
Phase 4 (AIM-120D) Contract Award	N/A	Jan 2004	Jan 2004	Jan 2004
Phase 4 (AIM-120D) CDR	N/A	Nov 2005	Nov 2005	Nov 2005
Phase 4 (AIM-120D) Functional Configuration Audit (FCA)	N/A	Sep 2009	Sep 2009	Sep 2009
Phase 4 (AIM-120D) Missile Deliveries to Meet F/A-18 RAA	N/A	May 2012	May 2012	May 2012
Phase 4 (AIM-120D) Missile Deliveries to Meet F- 15C/D RAA	N/A	May 2012	May 2012	May 2012
Phase 4 (AIM-120D) Full Production Go-ahead	N/A	Jan 2015	Jan 2015	Jan 2015
Last Delivery	Sep 2001	N/A	N/A	Jan 2027

(Ch-1)

**Change Explanations**

(Ch-1) Current estimate changed from Oct 2014 to Jan 2015 to update to actuals.

**Acronyms and Abbreviations**

AF - Air Force  
CDR - Critical Design Review  
D/IOT&E - Development / Initial Operational Test & Evaluation  
DSARC - Defense Systems Acquisition Review Council  
DT&E - Development Test and Evaluation  
FOT&E - Follow-on Test and Evaluation  
IOT&E - Initial Operational Test and Evaluation  
OPEVAL - Operational Evaluation  
P3I - Pre-Planned Product Improvement  
RAA - Required Assets Available

## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Weight (lbs)				
327	327	350	344	345
Reliability				
Ready Storage (hrs) (mature msl - 90K operational flight hours)				
60000	60000	45000	45000	45000
Availability (%)				
86	86	82	91.6	90.7
Captive-Carry (MTBM-Type I) (hrs)				
600	600	450	1,313	1,270
On Alert Storage MTBM				
30000	30000	22500	N/A	30000
Aircraft Configure/ Load - 3 Man Load Crew				
Install 4 Rail Launchers (mins)				
20	20	25	21	21
Load 4 Missiles from trailer (mins)				
15	15	20	18	18
Load 4 Missiles from container (mins)				
20	20	30	22	22
Missile checks (mins)				
1	1	5	1	1
All Weather Capability				
Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds	Day, Night, Rain, Clouds
Aircraft Compatibility				
F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18, F-35	F-15, F-16, F/A 18, F-22	F-15, F-16, F-14, F/A-18	F-15, F-16, F/A-18, F-22
All-Up Round				
Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed	Control Surfaces field installed
Net Ready				
N/A	Satisfies NCOW-RM and GIG Information	Satisfies 100% of enterprise level or	Satisfies NCOW-RM and GIG Information	Satisfies 100% of enterprise level or

(Ch-1)

(Ch-2)

	assurance reqmts	critical information reqmts	assurance reqmts	critical information reqmts
<b>Shipboard Survivability</b>				
N/A	Compatible in aircraft carrier electro-magnetic environment	Compatible in aircraft carrier electro-magnetic environment	Compatible in aircraft carrier electro-magnetic environment	Compatible in aircraft carrier electro-magnetic environment

Classified Performance information is provided in the classified annex to this submission.

#### Requirements Reference

Joint Service Operational Requirement (JSOR) dated May 22, 1991, Operational Requirements Document (ORD) (Combat Air Forces (CAF) 009-76-I/II/III-A) dated March 10, 1997 (revised January 21, 2004), and Capability Production Document (CPD) Phase 4 (AIM-120D) dated June 16, 2005

#### Change Explanations

(Ch-1) Current estimate changed from 90 to 90.7 due to current actuals as of December 31, 2015.

(Ch-2) Current estimate changed from 1200 to 1270 due to current actuals as of December 31, 2015.

#### Acronyms and Abbreviations

GIG - Global Information Grid

hrs - Hours

K - Thousands

lbs - Pounds

mins - Minutes

msl - Missile

MTBM - Mean Time Between Maintenance

NCOW-RM - Net Centric Operations Warfare - Reference Model

## Track to Budget

## RDT&amp;E

Appn	BA	PE	
Navy	1319	07	0207163N
	<b>Project</b>	<b>Name</b>	
	0981	AMRAAM	
Navy	1319	07	0603370N
	<b>Project</b>	<b>Name</b>	
	UNK	Beyond Visual Range, Air-to-Air Missile (BVRAAM), FY 1978-1981. (Sunk)	
Navy	1319	07	0604314N
	<b>Project</b>	<b>Name</b>	
	W0981	(AMRAAM), FY 1982-1992 (Shared) (Sunk)	
Air Force	3600	07	0207163F
	<b>Project</b>	<b>Name</b>	
	673777	AMRAAM (Shared)	
Air Force	3600	07	0603370F
	<b>Project</b>	<b>Name</b>	
	2437	(AMRAAM), FY 1978-1982 (Sunk)	
Air Force	3600	07	0604314F
	<b>Project</b>	<b>Name</b>	
	3096	(AMRAAM), FY 1982-1992 (Sunk)	

## Procurement

Appn	BA	PE	
Navy	1507	02	0206138M
	<b>Line Item</b>	<b>Name</b>	
	2206	AMRAAM	
Navy	1507	02	0204162N
	<b>Line Item</b>	<b>Name</b>	
	2206	AMRAAM	
Navy	1507	06	0204162N
	<b>Line Item</b>	<b>Name</b>	
	6120	Spares and Repair Parts (Shared)	
Air Force	3020	04	0207163F
	<b>Line Item</b>	<b>Name</b>	
	000999	Initial Spares / Repair Parts (Shared)	
	00099A	Initial Spares / Repair Parts (Sunk)	
	00099K	Initial Spares / Repair Parts (Sunk)	
Air Force	3020	01	0207163F

Line Item		Name	
00099L		Missile Replacement Equipment - Ballistic	(Shared) (Sunk)
Air Force	3020 02	0207163F	
	Line Item		Name
	MAMRAO	AMRAAM	



## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 1992 \$M			BY 1992 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	1725.7	2419.5	2661.5	2413.1	1350.6	2247.2	2236.7
Procurement	10552.5	13574.7	14932.2	13729.6	11761.8	17499.8	17665.3
Flyaway	--	--	--	12888.0	--	--	16540.7
Recurring	--	--	--	11016.5	--	--	14654.3
Non Recurring	--	--	--	1871.5	--	--	1886.4
Support	--	--	--	841.6	--	--	1124.6
Other Support	--	--	--	720.9	--	--	979.4
Initial Spares	--	--	--	120.7	--	--	145.2
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	12278.2	15994.2	N/A	16142.7	13112.4	19747.0	19902.0

#### Current APB Cost Estimate Reference

AMRAAM Program Office Estimate validated by the Air Force Cost Analysis Agency as part of the Non-Advocate Cost Assessment dated May 12, 2014

#### Confidence Level

Confidence Level of cost estimate for current APB: 54%

The life-cycle cost estimate represents the expected value, or mean, of the cost estimate distribution, and for this estimate, the confidence level is 54%. It takes into consideration relevant risks, including ordinary levels of external and unforeseen events. It aims to provide sufficient resources to execute the program under normal conditions encountering average levels of technical, schedule, and programmatic risk and external influence.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	15450	16427	17312
Total	15450	16427	17312

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	2219.5	1.9	1.8	1.8	1.8	2.0	1.9	6.0	2236.7
Procurement	10944.6	586.2	558.0	710.8	746.9	745.5	746.3	2627.0	17665.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	13164.1	588.1	559.8	712.6	748.7	747.5	748.2	2633.0	19902.0
PB 2016 Total	13373.4	664.4	683.7	827.8	864.2	850.8	786.7	2549.9	20600.9
Delta	-209.3	-76.3	-123.9	-115.2	-115.5	-103.3	-38.5	83.1	-698.9

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	11559	441	419	635	664	666	651	2277	17312
PB 2017 Total	0	11559	441	419	635	664	666	651	2277	17312
PB 2016 Total	0	11467	429	407	595	634	608	571	1829	16540
Delta	0	92	12	12	40	30	58	80	448	772

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1977	--	--	--	--	--	--	4.8
1978	--	--	--	--	--	--	6.7
1979	--	--	--	--	--	--	16.1
1980	--	--	--	--	--	--	26.2
1981	--	--	--	--	--	--	22.9
1982	--	--	--	--	--	--	137.9
1983	--	--	--	--	--	--	212.9
1984	--	--	--	--	--	--	197.3
1985	--	--	--	--	--	--	206.6
1986	--	--	--	--	--	--	91.1
1987	--	--	--	--	--	--	37.7
1988	--	--	--	--	--	--	26.7
1989	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	11.9
1991	--	--	--	--	--	--	17.9
1992	--	--	--	--	--	--	30.3
1993	--	--	--	--	--	--	38.9
1994	--	--	--	--	--	--	64.8
1995	--	--	--	--	--	--	63.8
1996	--	--	--	--	--	--	44.2
1997	--	--	--	--	--	--	9.7
1998	--	--	--	--	--	--	39.2
1999	--	--	--	--	--	--	33.5
2000	--	--	--	--	--	--	49.4
2001	--	--	--	--	--	--	50.4
2002	--	--	--	--	--	--	53.5
2003	--	--	--	--	--	--	39.3
2004	--	--	--	--	--	--	31.0
2005	--	--	--	--	--	--	31.9
2006	--	--	--	--	--	--	25.1
2007	--	--	--	--	--	--	30.4
2008	--	--	--	--	--	--	32.3
2009	--	--	--	--	--	--	38.3
2010	--	--	--	--	--	--	44.8
2011	--	--	--	--	--	--	47.7

2012	--	--	--	--	--	--	58.2
2013	--	--	--	--	--	--	43.1
2014	--	--	--	--	--	--	40.2
Subtotal	--	--	--	--	--	--	1956.7

Annual Funding								
3600   RDT&E   Research, Development, Test, and Evaluation, Air Force								
Fiscal Year	Quantity	BY 1992 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
1977	--	--	--	--	--	--	--	10.3
1978	--	--	--	--	--	--	--	13.2
1979	--	--	--	--	--	--	--	29.5
1980	--	--	--	--	--	--	--	43.2
1981	--	--	--	--	--	--	--	34.1
1982	--	--	--	--	--	--	--	191.7
1983	--	--	--	--	--	--	--	283.4
1984	--	--	--	--	--	--	--	252.6
1985	--	--	--	--	--	--	--	255.9
1986	--	--	--	--	--	--	--	110.1
1987	--	--	--	--	--	--	--	43.6
1988	--	--	--	--	--	--	--	30.1
1989	--	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	--	12.4
1991	--	--	--	--	--	--	--	18.0
1992	--	--	--	--	--	--	--	29.6
1993	--	--	--	--	--	--	--	37.2
1994	--	--	--	--	--	--	--	60.9
1995	--	--	--	--	--	--	--	58.9
1996	--	--	--	--	--	--	--	40.1
1997	--	--	--	--	--	--	--	8.7
1998	--	--	--	--	--	--	--	34.8
1999	--	--	--	--	--	--	--	29.5
2000	--	--	--	--	--	--	--	42.8
2001	--	--	--	--	--	--	--	43.0
2002	--	--	--	--	--	--	--	45.2
2003	--	--	--	--	--	--	--	32.8
2004	--	--	--	--	--	--	--	25.2
2005	--	--	--	--	--	--	--	25.3
2006	--	--	--	--	--	--	--	19.3
2007	--	--	--	--	--	--	--	22.8
2008	--	--	--	--	--	--	--	23.8
2009	--	--	--	--	--	--	--	27.8
2010	--	--	--	--	--	--	--	32.1
2011	--	--	--	--	--	--	--	33.5
2012	--	--	--	--	--	--	--	40.2
2013	--	--	--	--	--	--	--	29.3
2014	--	--	--	--	--	--	--	27.0
Subtotal	--	--	--	--	--	--	--	2097.9

Annual Funding								
1319   RDT&E   Research, Development, Test, and Evaluation, Navy								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
1978	--	--	--	--	--	--	--	6.0
1979	--	--	--	--	--	--	--	18.3
1980	--	--	--	--	--	--	--	27.3
1981	--	--	--	--	--	--	--	24.2
1982	--	--	--	--	--	--	--	3.3
1983	--	--	--	--	--	--	--	4.3
1984	--	--	--	--	--	--	--	7.3
1985	--	--	--	--	--	--	--	7.8
1986	--	--	--	--	--	--	--	4.2
1987	--	--	--	--	--	--	--	5.0
1988	--	--	--	--	--	--	--	22.3
1989	--	--	--	--	--	--	--	12.4
1990	--	--	--	--	--	--	--	6.9
1991	--	--	--	--	--	--	--	3.5
1992	--	--	--	--	--	--	--	2.5
1993	--	--	--	--	--	--	--	3.1
1994	--	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	--	7.8
1996	--	--	--	--	--	--	--	4.3
1997	--	--	--	--	--	--	--	2.1
1998	--	--	--	--	--	--	--	5.5
1999	--	--	--	--	--	--	--	4.5
2000	--	--	--	--	--	--	--	12.8
2001	--	--	--	--	--	--	--	11.3
2002	--	--	--	--	--	--	--	9.7
2003	--	--	--	--	--	--	--	7.7
2004	--	--	--	--	--	--	--	8.7
2005	--	--	--	--	--	--	--	8.5
2006	--	--	--	--	--	--	--	3.4
2007	--	--	--	--	--	--	--	3.5
2008	--	--	--	--	--	--	--	1.1
2009	--	--	--	--	--	--	--	5.2
2010	--	--	--	--	--	--	--	2.2
2011	--	--	--	--	--	--	--	1.2
2012	--	--	--	--	--	--	--	1.1
2013	--	--	--	--	--	--	--	1.2
2014	--	--	--	--	--	--	--	1.1
2015	--	--	--	--	--	--	--	1.5
2016	--	--	--	--	--	--	--	1.9
2017	--	--	--	--	--	--	--	1.8

2018	--	--	--	--	--	--	1.8
2019	--	--	--	--	--	--	1.8
2020	--	--	--	--	--	--	2.0
2021	--	--	--	--	--	--	1.9
2022	--	--	--	--	--	--	2.0
2023	--	--	--	--	--	--	2.0
2024	--	--	--	--	--	--	2.0
Subtotal	--	--	--	--	--	--	280.0

Annual Funding								
1319   RDT&E   Research, Development, Test, and Evaluation, Navy								
Fiscal Year	Quantity	BY 1992 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
1978	--	--	--	--	--	--	--	11.7
1979	--	--	--	--	--	--	--	32.3
1980	--	--	--	--	--	--	--	43.5
1981	--	--	--	--	--	--	--	35.4
1982	--	--	--	--	--	--	--	4.6
1983	--	--	--	--	--	--	--	5.7
1984	--	--	--	--	--	--	--	9.4
1985	--	--	--	--	--	--	--	9.7
1986	--	--	--	--	--	--	--	5.1
1987	--	--	--	--	--	--	--	5.9
1988	--	--	--	--	--	--	--	25.3
1989	--	--	--	--	--	--	--	13.5
1990	--	--	--	--	--	--	--	7.2
1991	--	--	--	--	--	--	--	3.5
1992	--	--	--	--	--	--	--	2.5
1993	--	--	--	--	--	--	--	3.0
1994	--	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	--	7.2
1996	--	--	--	--	--	--	--	3.9
1997	--	--	--	--	--	--	--	1.9
1998	--	--	--	--	--	--	--	4.9
1999	--	--	--	--	--	--	--	4.0
2000	--	--	--	--	--	--	--	11.1
2001	--	--	--	--	--	--	--	9.7
2002	--	--	--	--	--	--	--	8.2
2003	--	--	--	--	--	--	--	6.4
2004	--	--	--	--	--	--	--	7.1
2005	--	--	--	--	--	--	--	6.7
2006	--	--	--	--	--	--	--	2.6
2007	--	--	--	--	--	--	--	2.6
2008	--	--	--	--	--	--	--	0.8
2009	--	--	--	--	--	--	--	3.8
2010	--	--	--	--	--	--	--	1.6
2011	--	--	--	--	--	--	--	0.8
2012	--	--	--	--	--	--	--	0.8
2013	--	--	--	--	--	--	--	0.8
2014	--	--	--	--	--	--	--	0.7
2015	--	--	--	--	--	--	--	1.0
2016	--	--	--	--	--	--	--	1.2
2017	--	--	--	--	--	--	--	1.2



2018	--	--	--	--	--	--	1.1
2019	--	--	--	--	--	--	1.1
2020	--	--	--	--	--	--	1.2
2021	--	--	--	--	--	--	1.1
2022	--	--	--	--	--	--	1.2
2023	--	--	--	--	--	--	1.1
2024	--	--	--	--	--	--	1.1
Subtotal	--	--	--	--	--	--	315.2

Annual Funding 1507   Procurement   Weapons Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1989	26	26.0	--	2.7	28.7	2.5	31.2
1990	85	61.5	--	18.7	80.2	4.9	85.1
1991	300	191.5	--	52.9	244.4	17.5	261.9
1992	191	115.3	--	38.0	153.3	41.2	194.5
1993	165	72.5	--	20.3	92.8	12.4	105.2
1994	75	26.7	--	21.5	48.2	8.6	56.8
1995	106	40.5	--	24.6	65.1	9.9	75.0
1996	115	35.2	--	28.5	63.7	10.0	73.7
1997	100	30.4	--	16.3	46.7	6.0	52.7
1998	120	38.1	--	10.1	48.2	6.3	54.5
1999	100	36.5	--	9.0	45.5	5.4	50.9
2000	91	33.5	--	10.0	43.5	2.5	46.0
2001	63	25.3	--	9.1	34.4	3.4	37.8
2002	55	20.4	--	12.9	33.3	3.5	36.8
2003	76	34.4	--	12.5	46.9	3.5	50.4
2004	42	18.5	--	15.0	33.5	3.8	37.3
2005	37	16.4	--	9.4	25.8	3.0	28.8
2006	48	40.4	--	30.2	70.6	3.2	73.8
2007	42	60.4	--	25.0	85.4	3.4	88.8
2008	52	75.8	--	7.5	83.3	2.7	86.0
2009	57	80.3	--	2.4	82.7	2.6	85.3
2010	71	135.3	--	--	135.3	3.3	138.6
2011	101	134.2	--	--	134.2	5.0	139.2
2012	67	93.3	--	--	93.3	5.5	98.8
2013	67	81.1	--	--	81.1	6.4	87.5
2014	61	69.7	--	1.5	71.2	11.8	83.0
2015	--	--	1.9	--	1.9	0.3	2.2
2016	179	198.4	--	--	198.4	5.8	204.2
2017	163	204.1	--	--	204.1	1.7	205.8
2018	247	259.3	--	2.0	261.3	1.9	263.2
2019	260	271.8	--	--	271.8	3.0	274.8
2020	252	264.8	--	--	264.8	5.7	270.5
2021	248	266.5	--	--	266.5	9.2	275.7
2022	267	286.9	--	--	286.9	7.1	294.0
2023	266	281.9	--	--	281.9	7.3	289.2
2024	266	305.5	--	--	305.5	22.3	327.8
Subtotal	4461	3932.4	1.9	380.1	4314.4	252.6	4567.0

Annual Funding 1507   Procurement   Weapons Procurement, Navy							
Fiscal Year	Quantity	BY 1992 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1989	26	27.1	--	2.9	30.0	2.6	32.6
1990	85	62.0	--	18.9	80.9	4.9	85.8
1991	300	188.4	--	52.0	240.4	17.2	257.6
1992	191	110.6	--	36.5	147.1	39.5	186.6
1993	165	68.3	--	19.1	87.4	11.7	99.1
1994	75	24.7	--	19.9	44.6	7.9	52.5
1995	106	36.8	--	22.4	59.2	9.0	68.2
1996	115	31.6	--	25.6	57.2	9.0	66.2
1997	100	27.0	--	14.6	41.6	5.3	46.9
1998	120	33.5	--	8.9	42.4	5.5	47.9
1999	100	31.7	--	7.8	39.5	4.7	44.2
2000	91	28.7	--	8.5	37.2	2.2	39.4
2001	63	21.4	--	7.7	29.1	2.9	32.0
2002	55	17.1	--	10.7	27.8	3.0	30.8
2003	76	28.2	--	10.3	38.5	2.8	41.3
2004	42	14.7	--	12.0	26.7	3.0	29.7
2005	37	12.7	--	7.3	20.0	2.3	22.3
2006	48	30.6	--	22.8	53.4	2.4	55.8
2007	42	44.7	--	18.5	63.2	2.5	65.7
2008	52	55.2	--	5.6	60.8	1.9	62.7
2009	57	57.7	--	1.7	59.4	1.9	61.3
2010	71	95.5	--	--	95.5	2.4	97.9
2011	101	93.0	--	--	93.0	3.5	96.5
2012	67	63.7	--	--	63.7	3.7	67.4
2013	67	54.6	--	--	54.6	4.3	58.9
2014	61	46.3	--	1.0	47.3	7.8	55.1
2015	--	--	1.2	--	1.2	0.2	1.4
2016	179	127.5	--	--	127.5	3.8	131.3
2017	163	128.8	--	--	128.8	1.0	129.8
2018	247	160.4	--	1.3	161.7	1.2	162.9
2019	260	164.9	--	--	164.9	1.8	166.7
2020	252	157.5	--	--	157.5	3.4	160.9
2021	248	155.4	--	--	155.4	5.3	160.7
2022	267	164.0	--	--	164.0	4.1	168.1
2023	266	158.0	--	--	158.0	4.1	162.1
2024	266	167.8	--	--	167.8	12.3	180.1
Subtotal	4461	2690.1	1.2	336.0	3027.3	201.1	3228.4

Annual Funding							
3020   Procurement   Missile Procurement, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1984	--	--	--	29.2	29.2	--	29.2
1985	--	--	--	74.1	74.1	--	74.1
1986	--	--	--	193.8	193.8	4.1	197.9
1987	180	405.2	--	170.4	575.6	20.5	596.1
1988	400	535.5	--	160.6	696.1	15.2	711.3
1989	874	667.3	--	102.6	769.9	16.3	786.2
1990	803	576.3	--	88.4	664.7	17.9	682.6
1991	600	397.5	--	190.2	587.7	24.2	611.9
1992	700	438.5	--	73.2	511.7	18.1	529.8
1993	1000	422.2	--	140.5	562.7	30.6	593.3
1994	983	347.1	--	81.5	428.6	18.4	447.0
1995	412	123.3	--	75.5	198.8	31.7	230.5
1996	291	146.2	--	21.7	167.9	11.9	179.8
1997	133	93.6	--	10.8	104.4	8.2	112.6
1998	173	53.6	--	44.6	98.2	4.8	103.0
1999	180	67.0	--	22.4	89.4	1.0	90.4
2000	163	68.4	--	6.2	74.6	9.2	83.8
2001	170	75.3	--	9.4	84.7	10.6	95.3
2002	190	80.5	--	7.1	87.6	12.6	100.2
2003	124	69.9	--	4.1	74.0	11.0	85.0
2004	159	84.6	--	--	84.6	13.8	98.4
2005	159	87.7	--	--	87.7	19.2	106.9
2006	84	99.9	--	--	99.9	2.2	102.1
2007	59	103.9	--	--	103.9	11.6	115.5
2008	133	167.2	--	--	167.2	27.2	194.4
2009	133	161.3	--	--	161.3	45.8	207.1
2010	170	248.4	--	--	248.4	29.1	277.5
2011	246	311.9	--	--	311.9	28.2	340.1
2012	112	146.7	--	--	146.7	20.9	167.6
2013	113	176.5	--	--	176.5	24.9	201.4
2014	279	303.6	--	--	303.6	8.5	312.1
2015	223	305.0	--	--	305.0	14.7	319.7
2016	262	352.2	--	--	352.2	29.8	382.0
2017	256	317.3	--	--	317.3	34.9	352.2
2018	388	409.8	--	--	409.8	37.8	447.6
2019	404	429.2	--	--	429.2	42.9	472.1
2020	414	435.4	--	--	435.4	39.6	475.0
2021	403	430.1	--	--	430.1	40.5	470.6
2022	415	448.7	--	--	448.7	43.2	491.9
2023	532	563.8	--	--	563.8	44.0	607.8

2024	531	569.4	--	--	569.4	46.9	616.3
Subtotal	12851	10720.0	--	1506.3	12226.3	872.0	13098.3

Annual Funding							
3020   Procurement   Missile Procurement, Air Force							
Fiscal Year	Quantity	BY 1992 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1984	--	--	--	36.0	36.0	--	36.0
1985	--	--	--	88.8	88.8	--	88.8
1986	--	--	--	221.8	221.8	4.7	226.5
1987	180	445.0	--	187.1	632.1	22.6	654.7
1988	400	567.5	--	170.1	737.6	16.1	753.7
1989	874	676.7	--	104.0	780.7	16.6	797.3
1990	803	573.7	--	88.1	661.8	17.8	679.6
1991	600	384.8	--	184.1	568.9	23.4	592.3
1992	700	419.6	--	70.1	489.7	17.3	507.0
1993	1000	396.0	--	131.7	527.7	28.7	556.4
1994	983	319.0	--	74.9	393.9	16.9	410.8
1995	412	112.2	--	68.6	180.8	28.9	209.7
1996	291	131.3	--	19.5	150.8	10.7	161.5
1997	133	82.9	--	9.6	92.5	7.3	99.8
1998	173	47.0	--	39.1	86.1	4.2	90.3
1999	180	58.1	--	19.4	77.5	0.9	78.4
2000	163	58.6	--	5.3	63.9	7.9	71.8
2001	170	63.8	--	8.0	71.8	9.0	80.8
2002	190	67.1	--	5.9	73.0	10.5	83.5
2003	124	57.6	--	3.4	61.0	9.1	70.1
2004	159	68.2	--	--	68.2	11.1	79.3
2005	159	68.7	--	--	68.7	15.1	83.8
2006	84	76.1	--	--	76.1	1.7	77.8
2007	59	77.3	--	--	77.3	8.6	85.9
2008	133	122.1	--	--	122.1	19.9	142.0
2009	133	116.1	--	--	116.1	33.0	149.1
2010	170	176.2	--	--	176.2	20.7	196.9
2011	246	217.0	--	--	217.0	19.6	236.6
2012	112	100.3	--	--	100.3	14.3	114.6
2013	113	118.0	--	--	118.0	16.7	134.7
2014	279	200.1	--	--	200.1	5.6	205.7
2015	223	198.8	--	--	198.8	9.6	208.4
2016	262	225.5	--	--	225.5	19.1	244.6
2017	256	199.4	--	--	199.4	21.9	221.3
2018	388	252.5	--	--	252.5	23.3	275.8
2019	404	259.2	--	--	259.2	25.9	285.1
2020	414	257.8	--	--	257.8	23.5	281.3
2021	403	249.6	--	--	249.6	23.5	273.1
2022	415	255.3	--	--	255.3	24.6	279.9
2023	532	314.6	--	--	314.6	24.6	339.2

2024	531	311.5	--	--	311.5	25.6	337.1
Subtotal	12851	8325.2	--	1535.5	9860.7	640.5	10501.2

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	6/4/1987	5/23/1991
<b>Approved Quantity</b>	810	4159
<b>Reference</b>	Milestone IIIA ADM	Milestone IIIB ADM
<b>Start Year</b>	1987	1987
<b>End Year</b>	1989	1992

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the LRIP extension to include 6 lots, FY 1987 through FY 1992. The follow-on DAB Program Review, held on April 23, 1992, approved FRP for Lot VII (FY 1993) procurement. The original LRIP decision during the Milestone IIIA review by the DAB in June 1987 to procure 810 LRIP missiles which covered 2 lots. On May 23, 1991, the DAB for Milestone IIIB approved a procurement quantity of 4,159 missiles.



## Foreign Military Sales

Classified FMS information is provided in the classified annex to this submission.

## Nuclear Costs

None

## Unit Cost

### Unit Cost Report

Item	BY 1992 \$M	BY 1992 \$M	% Change
	Current UCR Baseline (Oct 2015 APB)	Current Estimate (Dec 2015 SAR)	

#### Program Acquisition Unit Cost

Cost	15994.2	16142.7	
Quantity	16427	17312	
Unit Cost	0.974	0.932	-4.31

#### Average Procurement Unit Cost

Cost	13574.7	13729.6	
Quantity	16427	17312	
Unit Cost	0.826	0.793	-4.00

Item	BY 1992 \$M	BY 1992 \$M	% Change
	Revised Original UCR Baseline (Sep 1996 APB)	Current Estimate (Dec 2015 SAR)	

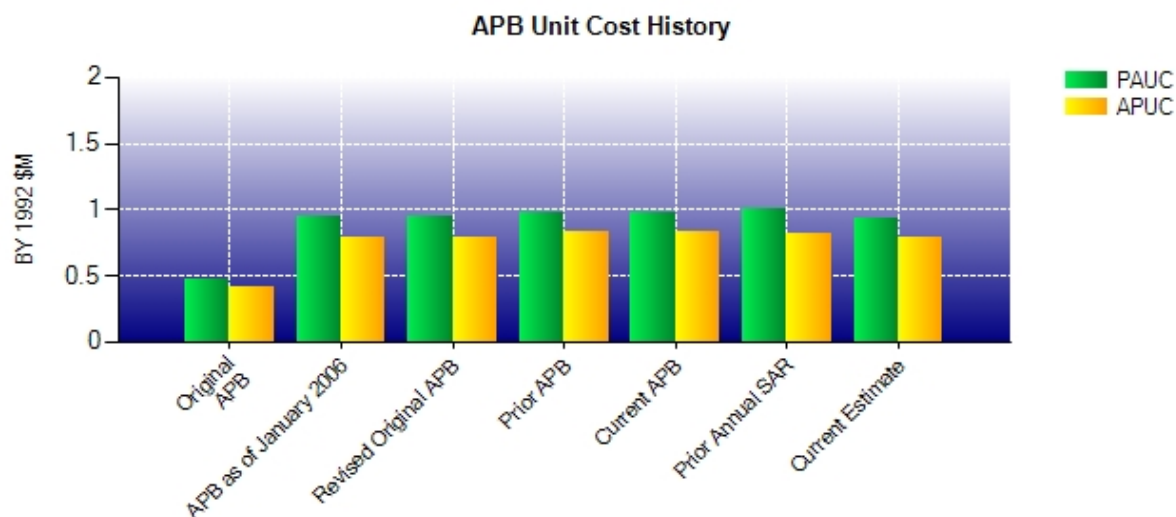
#### Program Acquisition Unit Cost

Cost	12302.9	16142.7	
Quantity	13038	17312	
Unit Cost	0.944	0.932	-1.27

#### Average Procurement Unit Cost

Cost	10205.7	13729.6	
Quantity	13038	17312	
Unit Cost	0.783	0.793	+1.28

## Unit Cost History



Item	Date	BY 1992 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Dec 1988	0.471	0.409	0.460	0.413
APB as of January 2006	Sep 1996	0.944	0.783	1.022	0.883
Revised Original APB	Sep 1996	0.944	0.783	1.022	0.883
Prior APB	Mar 2015	0.974	0.826	1.202	1.065
Current APB	Oct 2015	0.974	0.826	1.202	1.065
Prior Annual SAR	Dec 2014	1.002	0.822	1.246	1.057
Current Estimate	Dec 2015	0.932	0.793	1.150	1.020

## SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.849	-0.017	-0.007	0.145	0.068	0.079	0.000	0.033	0.301	1.150

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.761	-0.015	0.002	0.144	0.031	0.064	0.000	0.033	0.259	1.020

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	Nov 1978	Nov 1978	Nov 1978
Milestone II	N/A	Nov 1982	Sep 1982	Sep 1982
Milestone III	N/A	Dec 1984	Apr 1991	Apr 1991
IOC	N/A	Sep 1986	Sep 1992	Sep 1993
Total Cost (TY \$M)	N/A	11591.6	13112.4	19902.0
Total Quantity	N/A	24335	15450	17312
PAUC	N/A	0.476	0.849	1.150

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1350.6	11761.8	--	13112.4
Previous Changes				
Economic	-45.1	-205.8	--	-250.9
Quantity	--	+925.2	--	+925.2
Schedule	+26.5	+2575.2	--	+2601.7
Engineering	+643.8	+512.1	--	+1155.9
Estimating	+1148.7	+1316.9	--	+2465.6
Other	--	--	--	--
Support	--	+591.0	--	+591.0
Subtotal	+1773.9	+5714.6	--	+7488.5
Current Changes				
Economic	-5.2	-46.0	--	-51.2
Quantity	--	+511.9	--	+511.9
Schedule	--	-83.2	--	-83.2
Engineering	--	+29.8	--	+29.8
Estimating	-882.6	-207.2	--	-1089.8
Other	--	--	--	--
Support	--	-16.4	--	-16.4
Subtotal	-887.8	+188.9	--	-698.9
Total Changes	+886.1	+5903.5	--	+6789.6
CE - Cost Variance	2236.7	17665.3	--	19902.0
CE - Cost & Funding	2236.7	17665.3	--	19902.0

Summary BY 1992 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1725.7	10552.5	--	12278.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	+597.2	--	+597.2
Schedule	+13.6	+1126.0	--	+1139.6
Engineering	+510.9	+377.2	--	+888.1
Estimating	+716.5	+612.7	--	+1329.2
Other	--	--	--	--
Support	--	+338.5	--	+338.5
Subtotal	+1241.0	+3051.6	--	+4292.6
Current Changes				
Economic	--	--	--	--
Quantity	--	+281.8	--	+281.8
Schedule	--	-31.1	--	-31.1
Engineering	--	+16.4	--	+16.4
Estimating	-553.6	-130.5	--	-684.1
Other	--	--	--	--
Support	--	-11.1	--	-11.1
Subtotal	-553.6	+125.5	--	-428.1
Total Changes	+687.4	+3177.1	--	+3864.5
CE - Cost Variance	2413.1	13729.6	--	16142.7
CE - Cost & Funding	2413.1	13729.6	--	16142.7

Previous Estimate: December 2014

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-5.2
Realignment of RDT&E funds to O&S (Air Force). (Estimating)	-353.9	-556.8
Realignment of RDT&E funds to O&S (Navy). (Estimating)	-202.4	-331.0
Adjustment for current and prior escalation. (Estimating)	+0.3	+0.9
Revised estimate to reflect application of escalation indices (Air Force). (Estimating)	+1.5	+2.6
Revised estimate to reflect application of escalation indices (Navy). (Estimating)	+0.9	+1.7
RDT&E Subtotal	-553.6	-887.8

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-46.0
Quantity variance resulting from an increase of 772 missiles from 12,079 to 12,851 (Air Force). (Subtotal)	+422.9	+768.3
Quantity variance resulting from an increase of 772 missiles from 12,079 to 12,851 (Air Force). (Quantity)	(+281.8)	(+511.9)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+82.5)	(+149.9)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+16.4)	(+29.8)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+42.2)	(+76.7)
Additional Schedule variance resulting from realignment of missile buy profile from FY 2014 through FY 2024 (Air Force). (Schedule)	-79.9	-138.8
Additional Schedule variance resulting from realignment of missile buy profile from FY 2014 through FY 2024 (Navy). (Schedule)	-33.7	-56.9
Acceleration of procurement buy profile to meet total Air Force procurement objective of 12,851 missiles (Air Force). (Schedule)	0.0	-30.6
Acceleration of procurement buy profile within FYDP to meet total Navy procurement objective of 4,461 missiles (Navy). (Schedule)	0.0	-6.8
Increase in Diminishing Manufacturing Sources (DMS) costs due to updated estimate and realization of actual costs (Air Force). (Estimating)	+17.1	+34.3
Increase in DMS costs due to updated estimate and realization of actual costs (Navy). (Estimating)	+11.8	+18.7
Increase in Production test and technical support requirements due to updated estimate and realization of actual costs (Air Force). (Estimating)	+15.1	+26.6
Decrease in Production test and technical support requirements due to updated estimate and realization of actual costs (Navy). (Estimating)	-15.1	-25.5
Revised estimate methodology for missile hardware by using negotiated values instead of proposal data (Navy). (Estimating)	-93.8	-160.5
Revised estimate methodology for missile hardware by using negotiated values instead of proposal data (Air Force). (Estimating)	-134.8	-225.3
Adjustment for current and prior escalation. (Estimating)	+1.6	+4.5
Revised estimate to reflect application of escalation indices (Navy). (Estimating)	+11.1	+19.1
Revised estimate to reflect application of escalation indices (Air Force). (Estimating)	+14.3	+24.2
Adjustment for current and prior escalation. (Support)	+0.7	+0.7

Decrease in Other Support due to decrease of training equipment requirements (Air Force). (Support)	-9.0	-11.5
Decrease in Other Support due to decrease of training equipment requirements (Navy). (Support)	-2.9	-5.4
Decrease in Initial Spares due to decrease in initial spares requirements (Air Force). (Support)	0.0	-0.2
Increase in Initial Spares due to application of escalation indices (Navy). (Support)	+0.1	0.0
Procurement Subtotal	+125.5	+188.9

(QR) Quantity Related



## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** Raytheon Lot 25  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85706  
**Contract Number:** FA8675-11-C-0030  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** August 31, 2011  
**Definitization Date:** August 31, 2011

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
569.0	N/A	469	666.1	N/A	550	666.1	666.1

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional telemetry devices and the addition of AIM-120C7 missiles for FMS. Additionally, other contract modifications were performed as needed and were within scope. AIM-120D production is anticipated to complete in first quarter FY 2016.

### Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

### Notes

This contract is more than 90% complete; therefore, this is the final report for this contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** Raytheon Lot 26  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tuscon, AZ 85706  
**Contract Number:** FA8675-12-C-0011  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** March 30, 2012  
**Definitization Date:** March 30, 2012

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
497.1	N/A	404	528.0	N/A	404	528.0	528.0

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to addition of a Lean Cost Reduction Initiative, Life-of-Type buys for the Shortened Control Actuation System and a Final Assembly Test Station in CY 2012. Additionally, other contract modifications were performed as needed and were within scope. Lot 26 was completed in September 2015.

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (FFP) contract.

**Notes**

This contract is more than 90% complete; therefore, this is the final report for this contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** Raytheon Lot 27  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85706  
**Contract Number:** FA8675-13-C-0003  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** June 17, 2013  
**Definitization Date:** June 17, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
534.7	N/A	464	578.7	N/A	464	578.7	578.7

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to FMS offsets, second source warhead and Life of Type Buys. Additionally, other contract modifications were performed as needed and were within scope. AIM-120D production is anticipated to complete in July 2016.

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (FFP) contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** Program Support and Sustainment (PSAS)  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85706  
**Contract Number:** FA8675-14-C-0026  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** June 27, 2014  
**Definitization Date:** June 27, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
63.3	N/A	N/A	68.0	N/A	N/A	68.0	68.0

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to extending services for system engineering and support (SEPM) and service life prediction program (SLPP). Additionally, other contract modifications were performed as needed and were within scope.

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (FFP) contract.

**Notes**

The initial contract price was changed from \$166.4M to \$63.3M because the DMS refresh Ph 3 F3R is broken out as a separate contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** AMRAAM Production LOTS 28, 29, 30  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 E Hermans Road  
Tucson, AZ 85756  
**Contract Number:** FA8675-15-C-0022  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** December 22, 2014  
**Definitization Date:** December 22, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
1020.3	1020.3	1133	1071.5	1071.5	1133	1071.5	1071.5

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional Life of Type Buys, special tooling and equipment and PRP guidance sections. Additionally, other contract modifications were performed as needed and were within scope.

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (FPIF) contract.

**General Contract Variance Explanation**

Cost and schedule variances are not reported for this contract, because an earned value management (EVM) waiver was granted by Assistant Secretary of the Air Force for Acquisition on September 19, 2014. Under the Better Buying Power (BBP) goal to "Employ appropriate contract types," the AMRAAM production lot contract transitioned from a Firm Fixed Price (FFP) contract type to a Fixed Price Incentive (Firm Target) (FPIF) contract type. This approach allows the government to share expected cost savings with the contractor and does not require EVM information in order to properly execute this strategy.

**Notes**

**Production Lot 28:** The following missiles were purchased on the Lot 28 contract: 190 USAF AIM-120D Air Vehicles (AAVs), 9 USAF AIM-120D AMRAAM Air Vehicles Instrumented (AAVIs), 18 USAF and 54 USN AIM-120D Captive Air Training Missiles (CATMs) and 300 AIM-120C7 AMRAAM missiles for FMS customers. Lot 28 missile deliveries begin in July 2016 and are projected to be complete by July 2017.

**Production Lot 29:** The following missiles were purchased on the Lot 29 contract: 285 USAF and 7 AIM-120D Air Vehicles (AAVs) and 270 AIM-120C7 AMRAAM missiles for FMS customers. Lot 29 missile deliveries begin in July 2017 and are projected to be complete by April 2018.

The initial contract price was updated from \$491.5M to \$1020.3M due to the award of Lot 29 contract option.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DMSMS Refresh Phase 3 F3R  
**Contractor:** Raytheon Company  
**Contractor Location:** 1151 East Hermans Road  
 Tuscon, AZ 85706  
**Contract Number:** FA8675-14-C-0026/881  
**Contract Type:** Cost Plus Incentive Fee (CPIF)  
**Award Date:** June 27, 2014  
**Definitization Date:** May 27, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
99.9	N/A	N/A	99.9	N/A	N/A	116.7	114.6

Contract Variance			
Item	Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/2015)	-18.5	-4.4	
Previous Cumulative Variances	--	--	
Net Change	-18.5	-4.4	

**Cost and Schedule Variance Explanations**

The unfavorable cumulative cost variance is due to additional resources required to accommodate the delays in schedule in the areas of guidance section hardware, system on a chip (SOC) and integration.

The unfavorable cumulative schedule variance is due to issues with guidance section hardware, SOC, and integration and verification. The guidance section hardware team experienced challenges with several of the circuit card assemblies. Due to delays in development of engineering test fixtures, the team had to build test interface boards that drove additional cost in unplanned work. Issues associated with SOC include schedule delays due to design complexity. Issues associated with integration and verification include late hardware delivery and troubleshooting multiple issues.

**Notes**

This is the first time this contract is being reported.

**DMSMS Refresh Phase 3 F3R:** This contract includes Form-Fit-Function-Refresh (F3R). This effort supports USAF, USN and Foreign Military Sales (FMS) customers.

This contract was part of the Program Support and Sustainment (PSAS) contract and is now listed separately.

This contract is more than 90% complete; therefore, this is the final report for this contract.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	11584	10998	17312	63.53%
Total Program Quantity Delivered	11584	10998	17312	63.53%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	19902.0	Years Appropriated	40
Expended to Date	13044.4	Percent Years Appropriated	83.33%
Percent Expended	65.54%	Appropriated to Date	13752.2
Total Funding Years	48	Percent Appropriated	69.10%

The above data is current as of February 09, 2016.

## Operating and Support Cost

### Cost Estimate Details

**Date of Estimate:** January 05, 2016  
**Source of Estimate:** POE  
**Quantity to Sustain:** 17312  
**Unit of Measure:** Total Quantity  
**Service Life per Unit:** 25.00 Years  
**Fiscal Years in Service:** FY 1991 - FY 2050

The O&S costs are the direct costs for the tactical missile and the Captive Carry Missile (CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a 60-year deployment phase starting in FY 1991 for the Air Force and FY 1992 for the Navy. The Air Force estimate covers base operations including CCM, All-Up-Round (AUR) fault verification, operational firings, depot repairs (seven year Interim Contractor Support (ICS)), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and support, depot rework (five years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

### Sustainment Strategy

The AUR maintenance concept calls for aircraft loading/unloading, removal/replacement of wings and fins and missile Built-In-Test (BIT). A missile failing BIT will be sent to the Intermediate-Level Shop for test verification on the Missile Bit Test Set (Air Force only), Common Field-Level Memory Reprogramming Equipment, or Common Munitions BIT Reprogramming Equipment Plus. Failed missiles will be returned to the contractor AMRAAM depot for repair.

### Antecedent Information

The antecedent system is the AIM-7. The AIM-7 is the last semi-active air-to-air missile while the AIM-120 provides the first fully active and autonomous launch and leave medium range capability. The AIM-7 cost data was obtained from the Naval Visibility and Management of Operating and Support Cost (VAMOSOC) database (FY 1990 - FY 2013) and is historical in nature.

Annual O&S Costs BY1992 \$M			
Cost Element	AMRAAM Average Annual Cost Per Total Quantity	AIM-7 (Antecedent) Average Annual Cost For All Missiles	
Unit-Level Manpower	0.175		0.000
Unit Operations	0.311		0.627
Maintenance	7.867		4.290
Sustaining Support	16.610		4.615
Continuing System Improvements	12.333		1.192
Indirect Support	1.314		0.000
Other	0.000		0.000
Total	38.610		10.724

Cost Element Continuing System Improvements was revised to include O&S RDT&E for both Navy and Air Force.



Item	Total O&S Cost \$M			
	AMRAAM			AIM-7 (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	2210.0	2431.0	2316.6	N/A
Then Year	3928.3	N/A	4070.0	N/A

#### Equation to Translate Annual Cost to Total Cost

Total O&S Cost = Average Annual O&S Cost per Total Quantity \*total O&S years = \$38.610M \* 60 years = \$2316.6M

O&S Cost Variance		
Category	BY 1992 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2014 SAR	892.4	
Programmatic/Planning Factors	582.8	Realignment of RDT&E funds to O&S
Cost Estimating Methodology	0.0	
Cost Data Update	540.2	Update to actual costs
Labor Rate	0.2	Update to 2015 labor rates
Energy Rate	0.0	
Technical Input	301.0	Added new requirement for Program Office Manpower
Other	0.0	
Total Changes	1424.2	
Current Estimate	2316.6	

Program office completed a new O&S cost model. The O&S model includes adding 25 years to the program life, increasing the service life from 20 to 25 years, and realigning the RDT&E funds into O&S. Although there are quantity changes as well, the variances based on each of these changes cannot be defined individually.

#### Disposal Estimate Details

**Date of Estimate:** January 05, 2016  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 1992 \$M):** Total costs for disposal of all Total Quantity are 3.6

Letterkenny Munitions Center is utilized to demilitarize AMRAAM. The decision to demilitarize individual missiles or entire lots in lieu of refurbishment or retrofit will be made by Air Combat Command (ACC) for the Air Force and Navy Resource Sponsor for the Navy.

The disposal total cost was changed from 10.8 to 3.6 due to an increase in total inventory and a decrease in demil cost per missile.